



Name: Matt Hansen
9-12 Industrial Technology
Marcus-Meriden-Cleghorn-Remsen-Union
Extern host site: Simonsen Industries
Quimby, Iowa

Part I: Overview of Business

Simonsen Industries was founded in 1928 by a veterinarian named Warren Simonsen after he began exploring different protein source options to feed hogs on his family farm. After developing a successful rendering that supplied a viable protein source to area farmers, his 3 sons later added to it by exploring feedmill and fertilizer industries due to their own personal interests. After Warren’s son Merle grew frustrated with constantly altering new fertilizer applicators he purchased for their own fertilizer business, he decided it would be cheaper to build his own applicator in the off season. After modifying one of the families turkey barns shortly after world war II, Simonsen Manufacturing was born. The company is now in its 3rd generation, still family owned and operated in the small town of Quimby, Iowa and still produces a wide variety of ag fertilizer applicators and various forms of support equipment for that industry.

Part II: Job Specifics

Welding technicians collaborate with engineers and production manager to produce company products. Traditionally welding technicians need to be able to collaborate with others as many company products are built in shifts of small crews to eliminate strain on individuals.

To be a welder in this company, you must be able to pass a rigorous welding test, or work your way through the company’s system to a welding technician position. Welding technicians must be knowledgeable in various welding processes as well as be able to read blueprints, and most importantly fuse or weld material in a manner that is compliant with American Welding Society standards and procedures.

Typically, welders should have a diploma or associates degree in welding technology, or potential a bachelors in manufacturing technology. However, welders with on the job training through other companies can qualify for welding positions within this company.

Part III: Introduce the Problem

Invision your working on the production line for the company, and a dozen units have just been sold, all of which require an extensive amount of welding, especially on the hydraulic reservoir tanks that help the machine function. The tank construction tends to be the slowest part of the process because of how tanks are assembled and the ergonomics involved with the process. Your task is simple, along with fabricating tanks, analyze the current manufacturing practices and present a more efficient way to produce the product for the company.

Part IV: Background

Remember, there are key points that need to be considered when producing these reservoir tanks that will help you when addressing the manufacturing process of these tanks and the company’s needs.

- The company is open to reengineering the product, as long as the materials cost does not change, and the product still has the same fluid volume specifications.
- The reservoir must utilize welding and metal forming techniques that are currently available to the company.
- The company has had issues with the tanks leaking under low pressure when the mounting brackets are welded on, and also around the slanted filler necks.
- The parts and finished product are roughly 60lbs when finished with 16 pieces of steel involved in the current design. Ergonomics is the assembly process should be addressed.

Part V: Business Solution

I was allowed to spend time with the engineering team and production manager to address the issues behind this product line. One key concept was cutting out tabs for a mounting bracket to be included in the tank shell, before the metal is formed into the tanks final shape, thus eliminating the need to weld on mounting brackets. At this time, this is only a concept and a prototype will be produced before I finish my externship.

Part VI: Student Solutions

Potential solutions or ideas I would like to see our students considering when completing this activity in class:

- Creating a jig or fixture that requires less lifting from the fabricator
- Developing an assembly process that involves more effective weld joints, thus eliminating leaks
- Drafting a whole new design that requires less material
- Utilizing a different form of metal joint or welding process to eliminate leaks

I will be bringing in the prototype tank in as an example of possible alterations. The engineering team from Simonsens has also agreed to come and look at finished products when students do this activity.